

**REMARKS**

Claims 1-81 are pending in the present application. The Examiner has rejected claims 1-81.

**I. REJECTION OF CLAIMS 1-61 and 75-81 UNDER 35 U.S.C. § 103(a)**

Claims 1-61 and 75-81 stand rejected under 35 U.S.C. § 103(a) as being obvious over United States Patent No. 5,828,589 ("Degenhardt") in view of United States Patent No. 6,542,722 B1 ("Sorrells"). Applicants respectfully traverse the rejection.

**A. Claims 44-61**

**Claim 44 - Biquad Filter and Polyphase Filter**

Claim 44 recites a polyphase filter coupled to a biquad filter. In the Office Action, the Examiner states that these elements are met, in part, by Degenhardt at FIGS. 1-2; col. 2, lines 9-44; and col. 7, line 22 to col. 8, line 54. In addition, the Examiner states that these elements may be described in Sorrells at FIG. 49 and col. 54, lines 24-60. Applicants respectfully disagree. Applicants have carefully perused the drawings and text cited by the Examiner and can find no reference to a biquad filter or a polyphase filter.

*In fact, neither Degenhardt nor Sorrells even mentions a biquad filter or a polyphase filter.* Applicants respectfully submit that Degenhardt and Sorrells, individually or combined, do not teach a biquad filter or a polyphase filter. Since the combined references do not even mention a biquad or a polyphase filter, Applicants respectfully submit that the rejection cannot be maintained. It is therefore respectfully requested that the rejection be withdrawn with respect to claim 44 and its dependent claims (i.e., claims 45-61).

*If the Examiner intends to maintain the rejection of claim 44-61 over Degenhardt in view of Sorrells, then it should be simple matter of pointing out a filter in FIG. 1 or FIG. 2 of Degenhardt or a filter in FIG. 49 of Sorrells that is specifically taught to be a biquad filter or is specifically taught to be a polyphase filter.* FIG. 1 of Degenhardt illustrates an adaptive balance filter comprising an adaptive filter 5 and a main filter 15. Is the Examiner alleging that the adaptive filter 5 or the main filter 15 is either a biquad filter or a polyphase filter? If so, Applicants respectfully request that the Examiner provide support in Degenhardt for the allegation that filter 5 or filter 15 is a biquad filter or a polyphase filter. Is the Examiner alleging

that the low pass filters 33, 35, 37 of the quality comparator 19, which is illustrated in FIG. 1 and in greater detail in FIG. 2 of Degenhardt, are biquad filters or polyphase filters? If so, Applicants respectfully request that the Examiner provide support in Degenhardt for the allegation that filters 33, 35, 37 are biquad filters or polyphase filters. Is the Examiner alleging that filters 4910, 4920, 4930 of a typical superheterodyne receiver as illustrated in FIG. 49 of Sorrells are biquad filters or polyphase filters? If so, Applicants respectfully request that the Examiner provide support in Sorrells for the allegation that filters 4910, 4920, 4930 are biquad filters or polyphase filters.

After the Examiner has identified which of the above-identified filters is a biquad filter and which is a polyphase filter and after the Examiner has provided supported from the cited patent documents, Applicants respectfully request that the Examiner demonstrate how they are coupled.

Applicants have carefully reviewed the figures and text cited by the Examiner and respectfully submit that neither Degenhardt nor Sorrells describes or teaches a biquad filter or a polyphase filter.

It is therefore respectfully requested that the rejection be withdrawn with respect to claim 44 and its dependent claims 45-61.

#### **Claim 45 - Biquad Filters Intertwined with Polyphase Filters**

The Examiner alleges that the combined references teach biquad filters intertwined with polyphase filters in Degenhardt at col. 2, lines 9-44; and col. 7, line 22 to col. 8, line 54. Applicants respectfully submit that neither Degenhardt nor Sorrells teaches a biquad filter or a polyphase filter as discussed with respect to claim 44. In addition, even if the combined references did teach a biquad filter or a polyphase filter (which Applicants challenge), the combined references do not teach a plurality of biquad filters or a plurality of polyphase filters. Furthermore, the combined references do not teach biquad filters *intertwined* with polyphase filters. For at least the above reasons, the rejection with respect to claim 45 has been respectfully traversed.

#### **Claim 50 - Feedback Resistor and Feedback Capacitor**

In the Office Action, claim 50 was rejected as the same rationale as claim 11. The Examiner alleges that Degenhardt at col. 7, line 22 to col. 8, line 54 teaches biquad filters in which "each comprises first and second amplifiers each having a feedback loop comprising a

feedback resistor and feedback capacitor coupled in parallel.” *Degenhardt does not even mention a resistor or a capacitor. Degenhardt does not teach this level of detail.* Accordingly, Degenhardt does not teach the elements as set forth in claim 50 and the rejection with respect to claim 50 has been respectfully traversed.

**Claim 51 - Programmable Feedback Resistor**

In the Office Action, claim 51 was rejected as the same rationale as claim 12. The Examiner alleges that Degenhardt at col. 2, lines 9-44; and col. 7, line 22 to col. 8, line 54 teach a filter circuit in which “at least one of the feedback resistors is programmable”. As argued with respect to claim 50, *Degenhardt does not even mention a resistor. Degenhardt does not teach this level of detail.* Of course, if Degenhardt does not even mention a resistor, Degenhardt certainly does not teach a programmable resistor. Degenhardt is silent as to a programmable resistor. Thus, the rejection of claim 51 is respectfully traversed.

**Claim 52 - Each Resistor Having a Switch Coupled Thereacross**

Not only does Degenhardt not teach a resistor or, for that matter, a programmable resistor; but Degenhardt does not teach at least one programmable feedback resistor comprising “a plurality of resistors coupled in series, said plurality of resistors each having a switch coupled thereacross”.

*Degenhardt does not show this type of detail. Degenhardt does not teach a resistor. Degenhardt does not teach a programmable resistor. Degenhardt does not teach a programmable resistor comprising a plurality of resistors coupled in series. Degenhardt does not teach a programmable resistor comprising a plurality of resistors, the plurality of resistors each having a switch coupled thereacross.* Thus, the rejection of claim 52 is respectfully traversed.

**Claim 53 - Programmable Capacitor**

In the Office Action, claim 53 was rejected as the same rationale as claim 14. The Examiner alleges that Degenhardt at col. 2, lines 9-44; and col. 7, line 22 to col. 8, line 54 teach a filter circuit in which “at least one of the feedback capacitors is programmable”. As argued with respect to claim 50, *Degenhardt does not even mention a capacitor. Degenhardt does not teach this level of detail.* Of course, if Degenhardt does not even mention a capacitor (which Applicants challenge), Degenhardt certainly does not teach a programmable capacitor. Degenhardt is silent as to a programmable capacitor. Thus, the rejection of claim 53 is respectfully traversed.

**Claim 54 - Each Resistor Having a Switch Coupled Thereacross**

Not only does Degenhardt not teach a capacitor or, for that matter, a programmable capacitor; but Degenhardt does not teach at least one programmable feedback capacitor comprising "a plurality of capacitors coupled in parallel, said plurality of capacitors each having a switch coupled thereacross".

*Degenhardt does not show this type of detail.* Degenhardt does not teach a capacitor. Degenhardt does not teach a programmable capacitor. Degenhardt does not teach a programmable capacitor comprising a plurality of capacitor coupled in parallel. Degenhardt does not teach a programmable capacitor comprising a plurality of capacitor, the plurality of capacitor each having a switch coupled thereacross. Thus, the rejection of claim 54 is respectfully traversed.

**Claim 55 - Cross Coupled Resistor**

Claim 55 was rejected under the same rationale as claim 16. The Examiner alleges that Degenhardt at col. 2, lines 9-44; and col. 7, line 22 to col. 8, line 54 teaches biquad filters each comprising "a first cross coupled resistor coupled between an output of the first amplifier and an input of the second amplifier, and a second cross coupled resistor coupled between an output of the second amplifier and an input of the first amplifier". However, *Degenhardt does not even mention a resistor.* *Degenhardt does not teach this level of detail.* If Degenhardt does not teach a resistor, then Degenhardt does not teach a cross coupled resistor between an output of a first amplifier and an input of a second amplifier. If Degenhardt does not teach a resistor, then Degenhardt does not teach a cross coupled resistor between an output of a second amplifier and an input of a first amplifier. Thus, the rejection of claim 54 is respectfully traversed.

**Claims 56-61**

Claims 56-61 include many of the elements that were recited in claims 50-55. Accordingly, the rejection of claims 56-61 are respectfully traversed in view of the arguments made with respect to claims 50-55.

**Degenhardt Does Not Teach Details**

Applicants respectfully reiterate that the Examiner has overextended the teachings of Degenhardt in the combined references. The Examiner has stated that Degenhardt teaches a multitude of details in the ubiquitous col. 2, lines 9-44 and col. 7, line 22 to col. 8, line 54. However, Degenhardt does not teach any of the above-identified details and, in many cases, docs

not even mention the alleged element. *Applicants respectfully remind the Examiner that the references must teach each and every element of each and every claim.* It is respectfully submitted that the Office Action does not accomplish this by merely relying, over and over again, on col. 2, lines 9-44 and col. 7, line 22 to col. 8, line 54 of Degenhardt, which clearly does not teach the detailed elements and relationships between the elements as set forth in the claims.

**B. Claims 23-43**

Claim 23 recites "a plurality of cascading filters; and bypass means for bypassing at least one of the cascaded filters". In the Office Action, the Examiner admits that Degenhardt does not teach bypass means for bypassing at least one of the cascaded filters. Instead, the Examiner alleges that Sorrells teaches bypass means for bypassing at least one of the cascaded filters in Sorrells at FIG. 49 and col. 54, lines 24-60. Applicants respectfully submit that FIG. 49 does not show *bypassing* of any kind and, in fact, teaches away from bypassing means for bypassing at least one of the cascaded filters. Applicants respectfully draw the attention of the Examiner to the received signal 4902, which must pass through each any every component along the signal path. Thus, Sorrells teaches away from the claimed invention as set forth in claim 23. Applicants respectfully remind the Examiner that "[a] prior art reference that 'teaches away' from the claimed invention is a significant factor to be considered in determining obviousness". M.P.E.P. § 2145(X)(D)(1).

Applicants respectfully submit that the Examiner may be confusing bypass with bandpass. Filter 4910 appears to be a bandpass filter since it "removes all but a frequency range that includes the desired frequency". See Sorrells at col. 54, lines 27-28. However, note that the received signal 4902 had to pass through the bandpass filter 4910 and be filtered by the filter 4910. This directly teaches away from "bypassing at least one of the cascaded filters". In fact, in Sorrells, there is no way in which to bypass any of the components along the signal path. Accordingly, not only does Sorrells not teach bypass means for bypassing at least one of the cascaded filters, but Sorrells teaches away from bypassing means for bypassing at least one of the cascaded filters.

Even if Sorrells teaches bypass means (which Applicants challenge), to place bypass means across the adaptive filter 5 or the main filter 15 illustrated in Degenhardt would provide, as logically alleged by the Examiner, for the bypassing of the adaptive filter 5 or the main filter

15. It is at the core of the invention of Degenhardt that the adaptive filter 5 and the main filter 15 working together to provide an adaptive balance filter. To bypass either the adaptive filter 5 or the main filter 15 would render the invention of Degenhardt unsatisfactory for its intended purpose and would change the core operation of Degenhardt, either outcome being explicitly prohibited by the M.P.E.P. See, e.g., M.P.E.P. § 2143.01 (“[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious”); M.P.E.P. § 2143.01 (“[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the propose modification”).

Accordingly, it is respectfully requested that the rejection be withdrawn with respect to claim 23 and its dependent claims (i.e., claims 24-43).

**C. Claims 1-22**

**Claims 11-22**

Since claims 50-61 recite many of the same or similar elements as set forth in claims 11-22, Applicants make many of the same or similar arguments with respect to claims 11-22 as were made with respect to claims 50-61. For at least the above reasons, the rejection of claims 11-22 is respectfully traversed.

**Claims 9 and 10 - Pole**

Claims 9 and 10 recite a pole. In the Office Action, the Examiner states that the combined references teach a pole in Degenhardt at col. 7, line 22 to col. 8, line 54. *Degenhardt does not even mention a pole.* Thus, Degenhardt does not teach a pole as set forth in claims 9 and 10. For at least the above reasons, the rejection of claims 9 and 10 are respectfully traversed.

**Claims 7 and 10 - Complex Filter**

Claims 9 and 10 recite a complex filter. In the Office Action, the Examiner states that the combined references teach a complex filter in Degenhardt at col. 2, lines 9-44; and col. 7, line 22 to col. 8, line 54. *Degenhardt does not even mention a complex filter.* Thus, Degenhardt does not teach a complex filter as set forth in claims 7 and 10. For at least the above reasons, the rejection of claims 7 and 10 are respectfully traversed.

**Claim 6 - Biquad Filter**

Claim 6 recites a biquad filter. In the Office Action, the Examiner alleges that the combined references teach a biquad filter in Degenhardt at col. 6, line 25 to col. 7, line 40. Applicants have carefully perused the text cited by the Examiner. *Degenhardt does not even mention a biquad filter.* If Degenhardt does not even mention a biquad filter, then Degenhardt does not teach a biquad filter. For at least the above reasons, the rejection of claim 6 is respectfully traversed.

**Claims 2 and 5 - Bypass Circuit Comprising A Switch - Illogical Argument**

Claims 2 and 5 recite a bypass circuit comprising a switch. It is illogical for the Examiner, in one part of the Office Action, to state that Degenhardt does not teach a bypass circuit (see, e.g., admission of Examiner with respect to claim 1) and then, in a subsequent part of the Office Action, to state that Degenhardt teaches a bypass circuit comprising a switch. If Degenhardt does not teach a bypass circuit, then Degenhardt cannot teach the details of a bypass circuit such as, for example, a switch. Applicants respectfully request that the Examiner reconsider the logical consequences of his arguments.

**Claim 1 - Bypass Circuit**

Claim 1 recites "a plurality of cascaded filters; and a bypass circuit coupled across one of the cascaded filters". In the Office Action, the Examiner admits that Degenhardt does not teach a bypass circuit coupled across one of the cascaded filters. Instead, the Examiner alleges that Sorrells teaches a bypass circuit in Sorrells at FIG. 49 and col. 54, lines 24-60. Applicants respectfully submit that FIG. 49 does not show *bypassing* of any kind. In fact, the received signal 4902 must pass through each and every component along the signal path. Applicants respectfully submit that the Examiner may be confusing bypass with bandpass. Filter 4910 appears to be a bandpass filter since it "removes all but a frequency range that includes the desired frequency". See Sorrells at col. 54, lines 27-28. However, note that the received signal 4902 had to pass through the bandpass filter 4910 and be filtered by the filter 4910. It would not be correct to say that the received signal bypassed the filter 4910 or any other component illustrated in FIG. 49. In fact, in Sorrells, there is no way in which to bypass any of the components along the signal path.

Even if Sorrells teaches a bypass circuit (which Applicants challenge), there is no teaching to couple a bypass circuit across one of the cascaded filters. To place a bypass circuit across the adaptive filter 5 or the main filter 15 would provide for the bypassing of the adaptive

filter 5 or the main filter 15. It is at the core of the invention of Degenhardt that the adaptive filter 5 and the main filter 15 work together to provide an adaptive balance filter. To bypass either the adaptive filter 5 or the main filter 15 would render the invention of Degenhardt unsatisfactory for its intended purpose and would change the core operation of Degenhardt. Either outcome is explicitly prohibited by the M.P.E.P. § 2143.01.

Accordingly, it is respectfully requested that the rejection be withdrawn with respect to claim 1 and its dependent claims (i.e., claims 2-22).

**D. Claims 75-81**

Claim 75 relates to a method of complex filtering. The text and figures of Degenhardt and Sorrells cited by the Examiner do not teach or suggest complex filtering. In addition, although Degenhardt and/or Sorrells may generally contemplate some form of filtering, neither reference combined or individually teaches rejecting an image of a signal in a selected channel. Such depth of detail is lacking in the text and figures cited by the Examiner. For at least the above reasons, Applicants respectfully request that the rejection be withdrawn with respect to claim 75 and its dependent claims (i.e., claims 76-81).

Furthermore, claim 78 recites "introducing a zero to filter a frequency in the selected channel different from a frequency of the signal". Claim 79 recites "introducing a plurality of zeros each filtering a different frequency in the selected channel". Although Degenhardt sporadically mentions zeros in its specification, Degenhardt does not teach a relation between a zero and the filtering of a frequency as set forth in claims 78 and 79. For at least the above reasons, the rejection of claims 78 and 79 are respectfully traversed.

In addition, claim 81 recites "programming an order of complex filtering". The text and figures cited by the Examiner do not teach complex filtering and, in particular, programming an order of complex filtering. For at least the above reasons, the rejection of claim 80 is respectfully traversed.

**II. REJECTION OF CLAIMS 62-74 UNDER 35 U.S.C. § 103(a)**

Claims 62-74 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Degenhardt in view of Sorrells, and further in view of United States Patent No. 5,283,484 ("Brehmer"). Applicants respectfully traverse the rejection.



The teaching deficiencies identified herein with respect to Degenhardt and Sorrells are not made up by the teachings of Brehmer. Accordingly, the rejection of claims 62-74 cannot be maintained. It is therefore respectfully requested that the rejection be withdrawn with respect to claims 62-74.


### III. CONCLUSION

In view of at least the foregoing, it is respectfully submitted that the pending claims 1-81 are in condition for allowance. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the below-listed telephone number.

Please charge any required fees not paid herewith or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

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Respectfully submitted,

  
Michael T. Cruz  
Reg. No. 44,636

McAndrews, Held & Malloy, Ltd.  
500 West Madison Street, 34th Floor  
Chicago, Illinois 60661-2565  
Telephone: (312) 775-8084  
Facsimile: (312) 775-8100